

Section 1: Product and Company Identification

Advanced Specialty Gases
135 Catron Dr. Reno, NV 89512
775-356-5500

IN CASE OF EMERGENCY CALL CHEMTREC: 1-800-424-9300

Product Code: CHLORODIFLUOROMETHANE (R-22)

Section 2: Hazards Identification



Warning

Hazard Classification:
Gases Under Pressure

Hazard Statements:
Contains gas under pressure; may explode if heated

Precautionary Statements

Storage:
Protect from sunlight.
Store in well-ventilated place.

Section 3: Composition/Information on Ingredients

CAS #

75-45-6

Chemical Substance	Chemical Family	Trade Names
CHLORODIFLUOROMETHANE	Halogenated, Aliphatic	MONOCHLORODIFLUOROMETHANE; DIFLUOROMONOCHLOROMETHANE; DIFLUOROCHLOROMETHANE; FREON 22; FRIGEN 22; REFRIGERANT 22; UN 1018; CHCIF2

Section 4: First Aid Measures

Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.	Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	Not applicable route of exposure.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

Section 5: Fire Fighting Measures

Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Non-flammable. use suitable extinguishing media for surrounding fire.	Carbonyl fluoride, carbon monoxide released by thermal decomposition	<ul style="list-style-type: none"> ▪ Non-flammable ▪ Non-flammable

Section 6: Accidental Release Measures

Personal Precautions	Environmental Precautions	Methods for Containment
Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	Prevent from entering confined areas where accumulation is dangerous.	Stop leak if possible without personal risk.

Methods for Cleanup	Other Information
Evacuate and ventilate area.	None.

Section 7: Handling and Storage

Handling	Storage
Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Store in a tightly closed container. Store in a cool, dry place. Store in a well-ventilated area. Keep separated from incompatible substances. Store below 52 C.	Store and handle in accordance with all current regulations and standards.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines
CHLORODIFLUOROMETHANE: 1000 ppm (3540 mg/m ³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 1000 ppm ACGIH TWA 1000 ppm (3500 mg/m ³) NIOSH recommended TWA 10 hour(s) 1250 ppm (4375 mg/m ³) NIOSH recommended STEL

Engineering Controls

Handle only in fully enclosed systems.

Eye Protection	Skin Protection	Respiratory Protection
Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.	Non-flammable

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Gas	Clear	Colorless	N/A	Liquefied gas	Sweet odor	N/A

Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
None	Not available	15135.61 (log = 4.18) (estimated from water solubility)	1170 F (632 C)	Nonflammable	Nonflammable

Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
-42 F (-41 C)	-256 to -231 F (-160 to -146 C)	7120 mmHg @ 21 C	3.0 at 25C (77F) and 1013 hPa (Air=1)	3.87 @ 0 C	0.3% @ 25 C	Neutral	Not available	Not applicable	0.0122 cP @ 0 C

Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
86.47	C-H-Cl-F2	1.194 g/cm3 at 25 C (77 F)	Not available	Not available	Not applicable	Soluble: Ether, acetone, chloroform, hydrocarbons, ketones, esters, organic acids

Section 10: Stability and Reactivity

Stability	Conditions to Avoid	Incompatible Materials
May decompose on contact with heat and/or storage and use above room temperature. Releases toxic, corrosive, flammable or explosive gases.	May decompose on contact with heat and/or storage and use above room temperature. Releases toxic, corrosive, flammable or explosive gases.	Bases, metals, oxidizing materials

Hazardous Decomposition Products	Possibility of Hazardous Reactions
Halogenated compounds, oxides of carbon, hydrochloric acid, chlorine, phosgene	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

Oral LD50	Dermal LD50	Inhalation
LC50 (inhalation, rat) = 35 pph/15 minutes	Not available	Irritation, nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, disorientation, difficulty speaking, emotional disturbances, tingling sensation, tremors, loss of coordination, suffocation, convulsions, coma

Eye Irritation	Skin Irritation	Sensitization
Frostbite, irritation	Frostbite, irritation	Central nervous system depression, difficulty breathing

Chronic Effects

Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
IARC: Human Inadequate Evidence, Animal Limited Evidence, Group 3; ACGIH: A4 -Not Classifiable as a Human Carcinogen	Available.	Available.	No data

Section 12: Ecological Information

Fate and Transport

Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Relatively non-persistent in the environment. Highly volatile from water.	Accumulates very little in the bodies of living organisms.	Not expected to leach through the soil or the sediment.

Section 13: Disposal Considerations

Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
CHLORODIFLUOROMETHANE or REFRIGERANT GAS R 22	UN1018	2.2	Not applicable	2.2	75 kg or L	N/A	N/A

Canadian Transportation of Dangerous Goods

Shipping Name	UN Number	Class	Packing Group / Risk Group
CHLORODIFLUOROMETHANE or REFRIGERANT GAS R 22	UN1018	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations

CERCLA Sections	SARA 355.30	SARA 355.40
Not regulated.	Not regulated.	Not regulated.

SARA 370.21

Acute	Chronic	Fire	Reactive	Sudden Release
Yes	No	No	No	Yes

SARA 372.65

CHLORODIFLUOROMETHANE

OSHA Process Safety

Not regulated.

State Regulations

CA Proposition 65

Not regulated.

Canadian Regulations

WHMIS Classification

A

National Inventory Status

US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Listed on inventory.	Not listed.	Not determined.

Section 16: Other Information

NFPA Rating

HEALTH=2 FIRE=0 REACTIVITY=1

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard